TOP ENERGY

M5111–4WK/UM Diffusion Furnace

Overview

M5111–4WK/UM Diffusion Furnace is a kind of electronics manufacturing devices specially designed for industries of integrated circuit, microelectronics, crystalline silicon solar cell and power electronics, etc. The machine can be used for semiconductor manufacturing process like silicon wafer surface doping, oxidation, alloying, annealing and so on.

Benefits

- High process stability and uniformity proven by more than 500–stack applications.
- Five–section fast–heating double–circuit temperature control system to achieve a temperature control precision of 0.1 °C.
- Flexible furnace door sealing technology to achieve better sealing performanceand thermal insulation effect.
- Advanced pressure balancing systemto reduce the process variation causedby air exhaust.
- Automatic loading and unloading system and soft–landing boat conveyor.

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Specification

Capacity	Wafer size	125 mm × 125 mm, 156 mm × 156 mm
	Throughput	500 pcs/stack (single side process)
	Process type	liquid phosphorus source diffusion process
Temperature Control	Furnace body inside diameter	350mm (quartz tube outside diameter: 330 mm)
	Temperature control range	400 – 1100 ° C
	Flat temperature zone	≤ ± 0.5° C /1080 mm (801 – 1100 ° C), ≤ ± 1°C /1080 mm (400 – 800 °C)
	Single point temperature stability	≤ ± 0.5° C /4 h(at 900 ° C)
	Liquid source temperature control range	20 ° C ± 0.5 ° C
	Heating and cooling speed	max 25 ° C/min for heating, max 5 ° C/min for cooling
	Temperature control method	five−stage fast−heating double−circuit temperature control
Gas Piping System	Flow control method	purge nitride, process nitride and oxygen controlled by mass flow meters, protection gas controlled by float flowmeters
	Process gas flow control precision	± 0.5% FS
Loading and Unloading System	Lifting conveyor speed	50 – 5000 mm/min continuously adjustable
	Horizontal conveyor speed	20 – 2000 mm/min continuously adjustable
	Positioning precision	≤ ±1mm
	Buffer position	2
Soft−landing Boat Conveyor	Conveyor horizontal movement speed	50 – 800 mm/min continuously adjustable
	Positioning precision	≤ ± 1 mm
	Conveyor lifting speed	8 – 12 mm/min
	Max load of SiC paddle	15 KG
Control System	Temperature control	automatic temperature ramping and homeothermy function
	Alarm and protection	over−temperature, open circuit of thermocouple, short circuit and gas flow deviation
	Process control method	fully automatically controlled by PC; operated on touch screen
	Process curve	storing up to 100 process curves, with no less than 30 inflection points each
Other Parameters	Cleanliness class	1000
	Environmental insulation of furnace door	clean gas curtain
	Power	peak power ≤ 200 KVA, heat preservation ≤ 100 KVA (4−stack)